

AMENDMENTS TO THE CLAIMS

1. (Currently Amended) A method for providing pseudo gray levels between true gray levels on a color display, said method comprising:

determining a number of said true gray levels natively supported by said color display, wherein said true gray levels each correspond to all color drive settings for a pixel being equal value;

determining an increased number of gray levels desired to be available for display on said color display, wherein said increased number of gray levels includes said true gray levels and said pseudo gray levels, and wherein said increased number of gray levels is a multiple of said number of true gray levels natively supported by said color display;

receiving a number that identifies a level of said increased number of gray levels to be displayed at a select pixel;

dividing said received number by said multiple to compute a quotient;

selecting a true gray level of said true gray levels for [[a]] the select pixel, said true gray level having each color drive setting for said pixel being equal to said quotient; and

based on a remainder value obtained from said dividing, adjusting one or more of said color drive settings of said select pixel to create a set the select pixel to one of the pseudo gray levels, wherein said pseudo gray level will be perceived as falling between two gray levels of said true gray levels.

2. (Original) The method of claim 1 wherein said one or more drive settings of said pixel are adjusted by one level.

3. (Original) The method of claim 1 wherein there are three drive settings for said pixel.

4. (Original) The method of claim 3 wherein one drive setting differs from the other two drive settings by one level.

5. (Original) The method of claim 4 wherein said three drive settings are red, green and blue.

6. (Original) The method of claim 5 wherein said red drive setting is adjusted.

7. (Original) The method of claim 5 wherein said green drive setting is adjusted.
8. (Original) The method of claim 5 wherein said red drive setting and said green drive setting are adjusted.
9. (Previously Presented) A method of enhancing gray scale output on a color display, said method comprising:
 - entering an input number that identifies a level of gray to be displayed;
 - extracting a smaller ranged number from said input number, wherein said smaller ranged number is associated with a true gray value;
 - dividing said input number by a factor to obtain a displayable gray scale number; and
 - adjusting said displayable gray scale number based on a remainder obtained from said dividing.
10. (Original) The method of claim 9 wherein said input number identifies one of 256 gray levels that can be perceived.
11. (Original) The method of claim 10 wherein said smaller range number is associated with one of 64 true gray values that can be displayed on said color display.
12. (Original) The method of claim 10 wherein said factor is 4.
13. (Original) The method of claim 9 wherein said remainder indicates how much brightness is needed for said displayable gray scale number.
14. (Original) The method of claim 9, said method further comprising:
 - outputting said true gray value if said remainder is zero.
15. (Original) The method of claim 9, said method further comprising:
 - increasing red, green or blue outputs associated with said displayable gray scale number if said remainder is not zero.
16. (Original) The method of claim 15, said method further comprising:
 - adjusting said red output by one if said remainder is one.

17. (Withdrawn) The method of claim 15, said method further comprising:
adjusting said blue output by one if said remainder is one.

18. (Original) The method of claim 15, said method further comprising:
adjusting said green output by one if said remainder is two.

19. (Original) The method of claim 16, said method further comprising:
adjusting said red and green outputs by one if said remainder is three.

20. (Withdrawn) The method of claim 17, said method further comprising:
adjusting said blue and green outputs by one if said remainder is three.

21. (Currently Amended) A method of enhancing gray scales on a color display,
wherein a plurality of color drive settings are used for outputting a pixel, said method
comprising:

capturing an image to be represented as multiple shades of gray; and

mapping said multiple shades of gray of said image to provide a depth of gray levels
for a pixel beyond what is available in true gray scale on said color display, wherein said true
gray scale comprises a plurality of gray levels that each correspond to all of said color drive
settings for said pixel being equal value, and wherein said mapping comprises:

determining a number of gray levels in said true gray scale;

determining an increased number of gray levels desired to be available for
display on said color display to provide said depth, wherein said increased number of gray
levels includes said gray levels of said true gray scale and pseudo gray levels that are
perceivable as falling between two levels of said true gray scale;

receiving, for said pixel in said image, a number that identifies a level of said
increased number of gray levels to be displayed at said pixel;

dividing said received number by a ratio of said increased number of gray
levels to said number of gray levels in said true gray scale to compute a quotient;

selecting a gray level of said true gray scale for the pixel, said selected gray
level having each of said plurality of color drive settings for said pixel being equal to said
quotient; and

based on a remainder value obtained from said dividing, adjusting one or more

of said color drive settings of said pixel to set the select pixel to one of the pseudo gray levels.

22. (Canceled)

23. (Canceled)

24. (Currently Amended) The method of claim ~~[[23]]~~ 21 wherein said ~~color pixels~~ are represented by plurality of color drive settings comprise three drive settings.

25. (Original) The method of claim 24 wherein said three drive settings are red, green and blue.

26. (Original) The method of claim 25, said method further comprising:
adjusting said three drive settings based on the level of brightness needed for display.

27. (Previously Presented) A system for enhancing gray scale output on a color display, said system comprising:

a field programmable gate array (FPGA) for generating an input number, extracting a smaller ranged number from said input number, dividing said input number by a factor to obtain a displayable gray scale number, and adjusting color outputs based on a remainder obtained from said dividing; and

a color display for receiving said adjusted color outputs from said FPGA.

28. (Original) The system of claim 27 wherein said input number identifies a pseudo gray level to be displayed.

29. (Original) The system of claim 27 wherein said smaller ranged number is associated with a true gray value that can be displayed.

30. (Original) The system of claim 29 wherein said true gray value is displayed if said remainder is zero.

31. (Original) The system of claim 30 wherein said color outputs to be adjusted are associated with a red part and a green part of a pixel.

32. (Original) The system of claim 30 wherein said FPGA adjusts said color output associated with a red part of a pixel by one if said remainder is one.

33. (Original) The system of claim 30 wherein said FPGA adjusts said color outputs associated with a red part and green part of a pixel by one if said remainder is three.

34. (Original) The system of claim 30 wherein said FPGA adjusts said color output associated with a green part of a pixel by one if said remainder is two.

35. (Withdrawn) The system of claim 27 wherein said color outputs to be adjusted are associated with a blue part and a green part of a pixel.

36. (Withdrawn) The system of claim 35 wherein said FPGA adjusts said color output associated with a blue part of a pixel by one if said remainder is one.

37. (Withdrawn) The system of claim 35 wherein said FPGA adjusts said color outputs associated with a blue part and green part of a pixel by one if said remainder is three.

38. (Withdrawn) The system of claim 35 wherein said FPGA adjusts said color output associated with a green part of a pixel by one if said remainder is two.

39. (Previously Presented) A method of enhancing gray scale output on a color display, said method comprising:

- selecting an 8-bit number that identifies a gray level to be displayed;
- extracting an upper 6 bits of said 8-bit number, wherein said upper 6 bits are associated with a gray value;
- dividing said 8-bit number by 4 to obtain a displayable gray scale number; and
- adjusting said displayable gray scale number based on a remainder obtained from said dividing.

40. (Original) The method of claim 39, said method further comprising:
outputting said gray value if said remainder is zero.

41. (Original) The method of claim 39, said method further comprising:
increasing red and green outputs associated with said displayable gray scale number is
said remainder is not zero.

42. (Original) The method of claim 41, said method further comprising:
increasing said red output by one if said remainder is one.

43. (Original) The method of claim 41, said method further comprising:
increasing said green output by one if said remainder is two.

44. (Original) The method of claim 41, said method further comprising:
increasing said red and green outputs by one if remainder is three.

45. (New) A method of enhancing gray scale output on a color display, said
method comprising:

determining a number of true gray levels natively supported by said color display,
wherein said true gray levels each correspond to all color drive settings for a pixel being
equal value;

determining a desired number of gray levels to be available for display on said color
display, wherein said desired number of gray levels is greater than said number of true gray
levels natively supported by said color display and wherein said desired number of gray
levels is a multiple of said number of true gray levels natively supported by said color
display;

receiving a number that identifies a level of said desired number of gray levels to be
displayed at a select pixel;

dividing said received number by said multiple to compute a quotient, wherein said
quotient provides a preliminary value for each of the color drive settings for the select pixel;

based on a remainder obtained from said dividing, determining an adjustment to said
preliminary value for at least one of the color drive settings for the select pixel; and

using said color drive settings to output the select pixel on said color display.

46. (New) The method of claim 45 wherein said color drive settings comprise red,
green, and blue drive settings, and wherein the method further comprising:

when said remainder is zero, determining no adjustment to be made to said

preliminary value for any of the color drive settings for the select pixel;

when said remainder is a first non-zero value, determining an increase in intensity of said red or blue drive setting;

when said remainder is second non-zero value, determining an increase in intensity of said green drive setting; and

when said remainder is a third non-zero value, determining an increase in intensity of said green drive setting and an increase in intensity of one of said red and blue drive setting.

47. (New) The method of claim 45 wherein said multiple is four.

48. (New) The method of claim 47 wherein said number of true gray levels natively supported by said color display is 64, and wherein said desired number of gray levels to be available for display on said color display is 256.

49. (New) A method of enhancing gray scale output on a color display, said method comprising:

determining a number of true gray levels natively supported by said color display, wherein said true gray levels each correspond to all color drive settings for a pixel being equal value;

determining a desired number of gray levels to be available for display on said color display, wherein said desired number of gray levels is greater than said number of true gray levels natively supported by said color display;

receiving a number that identifies a level of said desired number of gray levels to be displayed at a pixel;

dividing said received number by a ratio of said desired number of gray levels to said number of true gray levels natively supported by said color display to compute a quotient, wherein said quotient provides a preliminary value for each of the color drive settings for the select pixel;

when a remainder obtained from said dividing is zero, setting each of the color drive settings to the preliminary value for outputting the select pixel; and

when said remainder obtained from said dividing is non-zero, adjusting said preliminary value for at least one of the color drive settings for outputting the select pixel.

50. (New) The method of claim 49 wherein said color drive settings comprise red, green, and blue drive settings, and wherein the method further comprising:

when said remainder is a first non-zero value, determining an increase in intensity of said red or blue drive setting;

when said remainder is second non-zero value, determining an increase in intensity of said green drive setting; and

when said remainder is a third non-zero value, determining an increase in intensity of said green drive setting and an increase in intensity of one of said red and blue drive setting.

51. (New) The method of claim 49 wherein said ratio is 4/1.

52. (New) The method of claim 51 wherein said number of true gray levels natively supported by said color display is 64, and wherein said desired number of gray levels to be available for display on said color display is 256.